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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/760,926	01/16/2001	Takao Abe	09792909-4756	4866

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EXAMINER	
CREPEAU, JONATHAN	
ART UNIT	**PAPER NUMBER**
1746	14

DATE MAILED: 09/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/760,926	ABE, TAKAO	
	Examiner	Art Unit	
	Jonathan S. Crepeau	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 August 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1,2,4-9,12 and 13* is/are allowed.

6)☒ Claim(s) *3,10,11 and 14-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *21 July 2003* is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Pri rity under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 21, 2003 has been entered.

This Office action addresses claims 1-18. Claims 1, 2, 4-9, 12, and 13 remain allowed. Claims 3, 10, and 11 remain rejected under 35 USC §112, first paragraph, as not being enabled by the specification. Claims 3, 10, 11, and 14-19 remain rejected under 35 USC §103 for substantially the reasons of record. This action is non-final.

Drawings

2. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on July 21, 2003 have been approved. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. Applicants are also reminded of their obligation to submit corrected drawings effecting the changes shown in the proposed drawing correction filed on January 13, 2003. The correction to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities: On page 26, second paragraph, Figure "1A" is referenced, however, Figure 1A does not exist in the application. In the remarks submitted on July 21, 2003, Applicants state that Figure 1A of the drawings has been changed to Figure 1. However, this does not cure the objection to the specification because Figure 1A still does not exist in the application. The specification should be amended to simply state "Figure 1."

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. Claims 3, 10, and 11 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a projecting portion connected to a lead through a hole in the disk, does not reasonably provide enablement for a projecting portion connected to a lead through a "small-thickness portion" of the disk. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. The claimed disk is best shown in Figs. 5A-D of the application as reference character 11. It is not shown or discussed how the projecting portion (6a) is connected to a lead through a "small thickness portion" of the disk 11. The projecting portion is, however, clearly connected through the hole (11c) in the disk. Correction and/or clarification is required.

Claim Rejections - 35 USC § 103

5. Claims 3, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2000-21380 in view of JP 10-284035.

JP 2000-21380 is directed to nonaqueous lithium secondary batteries (see paragraph [0001] of the machine translation). As shown in Figure 11, a safety valve (RP) is arranged on one end side of a cylindrical outer packaging can (1) holding an electrode element therein. The safety valve comprises a projecting portion (532) that projects toward the electrode element and is connected to a lead of the element (32) at the center of the safety valve. As shown in Figures 8 and 10, the safety valve comprises a plurality of linear thin portions (R5) that are formed almost along circumferences of concentric circles surrounding the projection. Additional thin portions (R4) extend in the radial direction and connect adjacent ends of the circumferential thin portions. The lengths of the circumferential thin portions are almost equal to each other. The valve is welded on a sub-disk (9) on a free end of the positive electrode lead (32) (see paragraph [0029]). Regarding claim 3, the reference further teaches the presence of a disk (10) comprising a central hole and a plurality of peripheral holes (101) located along a circle centering on a symmetric point of the central hole (see Figure 11).

JP 2000-21380 does not expressly teach that the electrode element is a spirally-wound laminate (claim 11) or that the battery comprises electrode materials which dope and undope lithium (e.g., that it is a lithium-ion battery) (claim 10). The reference further does not expressly teach that the disk has a linear thin portion (claim 3).

JP 10-284035 is directed to an explosion-proof mechanism for a sealed battery. In Figure 1, it teaches an upper safety valve (17) having a thin portion welded to a lower disk (18) also having a thin portion (29).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the disclosure of JP '035 to use a thin portion in the disk of JP '380. In paragraph [0010], JP '035 teaches that "reliable current interception function" can be obtained using this configuration. Accordingly, the artisan would be motivated to use a rupturable thin portion in the disk of JP '380.

Additionally, the artisan would be motivated to use such a spiral laminate as the electrode element of JP '380. As noted above, JP '380 teaches a cylindrical battery body in Figure 11. The artisan would therefore be motivated to use a spiral laminate because this structure is commonly used in cylindrical lithium batteries and is known to result in a high energy density. Furthermore, the artisan would be motivated to use electrode materials that dope and undope lithium so as to result in a lithium-ion battery, because these materials are known to have higher cycle life and increased safety compared with electrode materials that do not intercalate lithium (e.g., lithium metal). Accordingly, this limitation is also not considered to distinguish over the references.

6. Claims 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taki et al (U.S. Patent 5,418,082) in view of JP 10-284035.

Regarding claims 17 and 19, Taki et al. is directed to nonaqueous lithium secondary batteries having spirally-wound electrode laminates (see col. 1, lines 10 and 46). Regarding claim 14, as shown in Figure 6, a safety valve (5) is arranged on one end side of the cylindrical outer packaging can (2) holding the electrode element therein. The safety valve comprises a projecting portion (9) that projects toward the electrode element and is connected to a lead (7) of the element at the center of the safety valve. A disk (23) having a central hole (21) is positioned between the safety valve and the electrode element, and the projecting portion is connected to the lead of the electrode element through the central hole. The disk further comprises a plurality of holes (22) located along a circle centering on a symmetrical point of the central hole.

The reference does not expressly teach that the disk has a linear thin portion formed in a circular shape surrounding the hole (claims 14 and 15). The reference further does not teach that the battery comprises electrode materials which dope and undope lithium (e.g., that it is a lithium-ion battery) (claims 16 and 18).

As noted above, JP 10-284035 is directed to an explosion-proof mechanism for a sealed battery. In Figure 1, it teaches an upper safety valve (17) welded to a lower disk (18) having a circular thin portion (29).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the disclosure of JP '035 to use a thin portion in the disk of Taki et al. In paragraph [0010], JP '035

teaches that "reliable current interception function" can be obtained using this configuration. Accordingly, the artisan would be motivated to use a rupturable thin portion in the disk of Taki et al.

Furthermore, the artisan would be motivated to use electrode materials that dope and undope lithium so as to result in a lithium-ion battery, because these materials are known to have higher cycle life and increased safety compared with electrode materials that do not intercalate lithium (e.g., lithium metal). It is noted that the Taki reference teaches a "carbon lithium battery" in column 1, line 11, which is indicative of a carbonaceous lithium intercalation negative electrode. Accordingly, the recitation of intercalation electrodes in claims 16 and 18 is also not considered to distinguish over the references.

Response to Arguments

7. Applicant's arguments filed July 21, 2003 have been fully considered but they are not persuasive. Regarding the §103 rejections, Applicants assert that "none of the references discloses a safety valve comprising of a plurality of peripheral holes along the center hole symmetrically." However, it is submitted that Taki et al., in Figure 6, and JP 2000-21380, in Figure 11, both fairly teach this limitation. Additionally, Applicants discuss the JP 10-284035 reference, but fail to address the motivation for combining its teachings with those of the JP '380 and Taki references. Accordingly, these rejections are still believed to be proper and are maintained herein.

With regard to the §112, first paragraph rejection of claims 3, 10, and 11, Applicants assert that the amendments made to the specification are sufficient to obviate the rejection. However, the specification, even in light of the amendments, still does not appear to adequately enable an artisan to make and use the subject matter recited in claim 3. The amendments simply provide literal antecedent basis for the claim language. It would still be unclear to an artisan how the projecting portion (6a) is connected to a lead (4) "through" a small thickness portion (11e) of the disk (11). Neither the amendments nor Applicants' accompanying remarks sufficiently clarify the issue. This is in contrast to claim 4, which is clearly enabled and which recites that the projecting portion is connected through a central hole (11c) in the disk. Further clarification or other appropriate action with respect to claim 3 is respectfully requested.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (703) 305-0051. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, can be reached at (703) 308-4333. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900. Additionally, documents may be faxed to (703) 872-9310 (for non-final communications) or (703) 872-9311 (for after-final communications).

Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

JONATHAN CREPEAU
PATENT EXAMINER
ART UNIT 1746

JSC

September 17, 2003